

User Manual

Idesco DESCoder 2.0

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1. Introduction

1.1. Short Description

Idesco DESCoder 2.0 SW is used for encoding MIFARE® DESfire cards and tags. The program is used with Idesco Access 9 CD 2.0 reader. Idesco DESCoder can be used for access card and configuration card programming.

2. General Information

2.1. Installing the Program

DESCoderSetup file is used for installing the program. To install the program, run DESCoderSetup file. Follow the installation instructions on the screen.

2.2. MIFARE® DESfire Memory Structure

2.2.1. MIFARE® DESfire MF3ICD40 (4Kbyte)

Memory structure:

- MF3ICD40 EEprom has 4Kbyte memory size.
- Memory can be divided up to 28 applications.
- Each application can have up to 16 files.

Security features:

- Unique 7 byte UID number (cascade level 2).
- Up to 14 keys per one application.
- One PICC level master key can be used for card maintenance.
- Support for TDES DESfire native mode for encryption.

When configuring the Access 8 CD reader, please note that only TDES Native can be used for authentication. Authentication method can be configured to the reader with configuration cards. Reader can include max 10 authentication read keys. Data can be transferred plain or encrypted.

2.2.2. MIFARE® DESfire EV1 (2Kbyte /4Kbyte /8Kbyte)

Memory structure:

- EV1 type EEPROM has 2Kbyte, 4Kbyte or 8Kbyte memory size.
- Memory can be divided up to 28 applications.
- Each application can have up to 32 files.

Security features:

- Unique 7 byte UID number (cascade level 2).
- Up to 14 keys per one application.
- One PICC level master key can be used for card maintenance.
- Support for TDES DESfire native mode, TDES Standard mode, 3KTDES and AES for encryption.

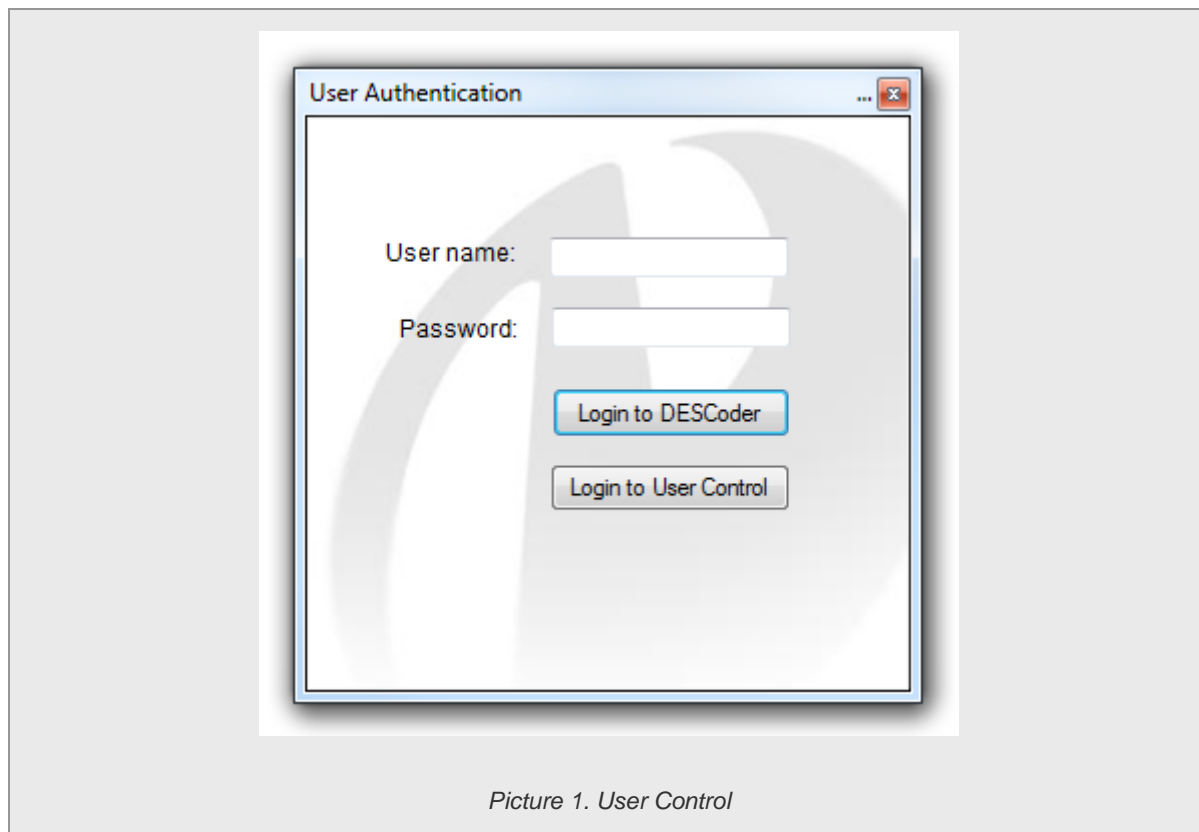
When configuring the Access 8 CD reader, choose the correct authentication method for the required security level. Authentication method can be configured to the reader with configuration cards. Reader can include max 10 authentication read keys. Access 8 CD reader supports Native TDES 16 byte or AES 128 bit encryption for authentication. Data can be transferred plain or encrypted.

2.3. Security

For security reasons Access card and Configuration card files should be saved in a directory that is protected in appropriate way. Idesco DESCoder 2.0 will always encrypt Access card and Configuration cardfiles and encrypted card files are only openable using Idesco DESCoder 2.0 software and user who create card file could also encrypt file using own password for encryption. Then opening the card file requires that password.

3. Program Description

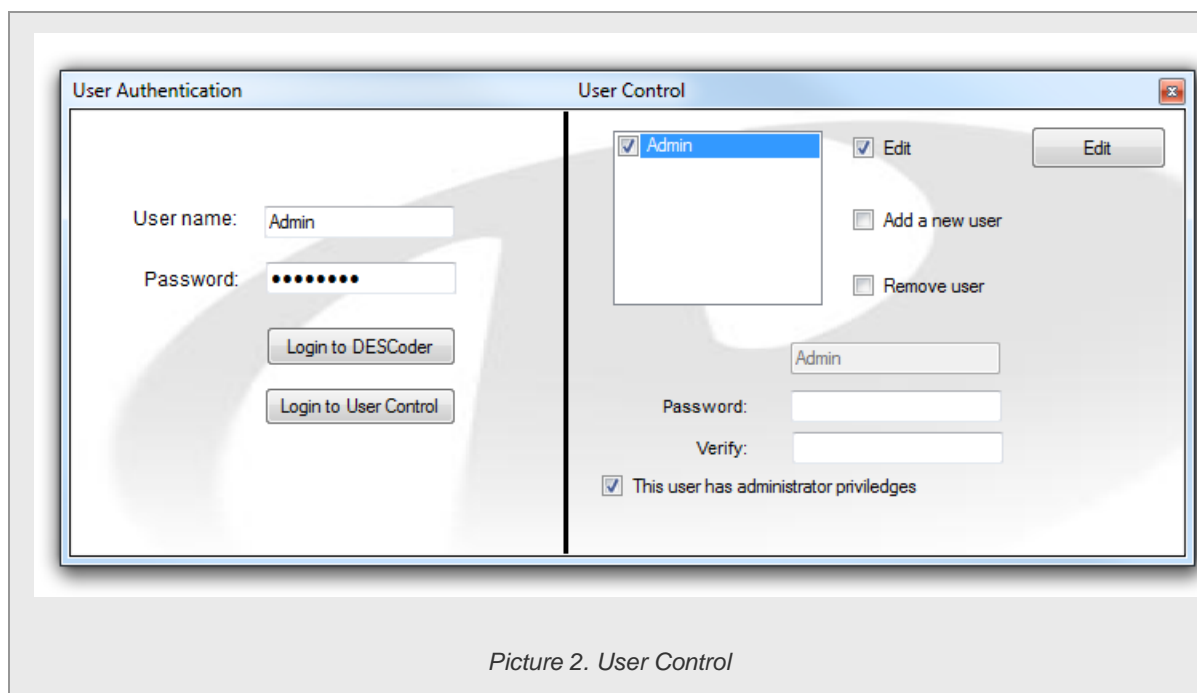
3.1. User Control



After installation, default Settings:

User name: 'Admin'

Password: 'Password'



In user control page there is a 'Edit', 'Add a new user' and 'Remove user' controls. And checking 'This user has administrator privileges' checkbox affects the rights.

Edit: It is possible to change the user password or change user rights.

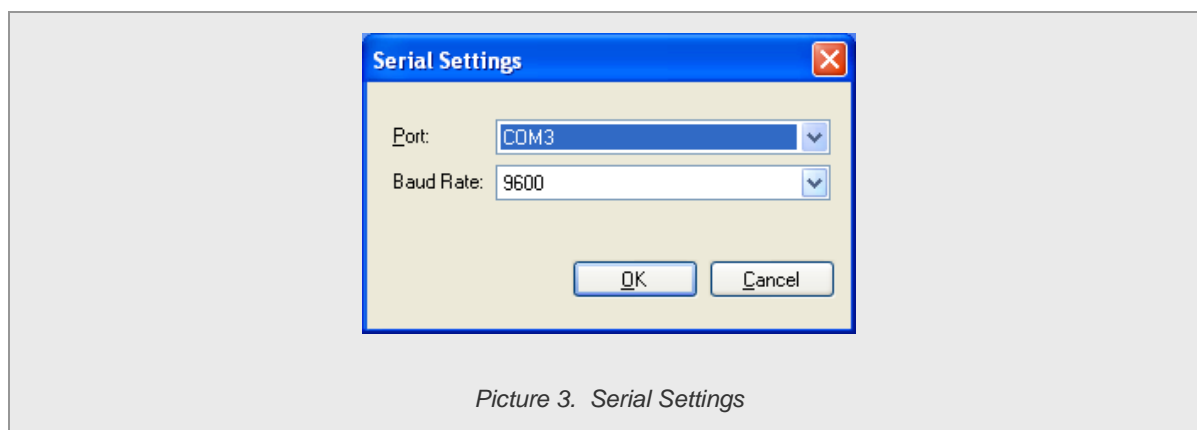
Add a new user: It is possible to add a new user and give right privileges for them.

Remove: Remove user from database.

3.2. Serial Settings Menu

Reader serial parameters must be entered before the program can be used. Choose the COM port where the reader is connected to. Choose baud rate and press OK. As a default baud rate is 9600 baud.

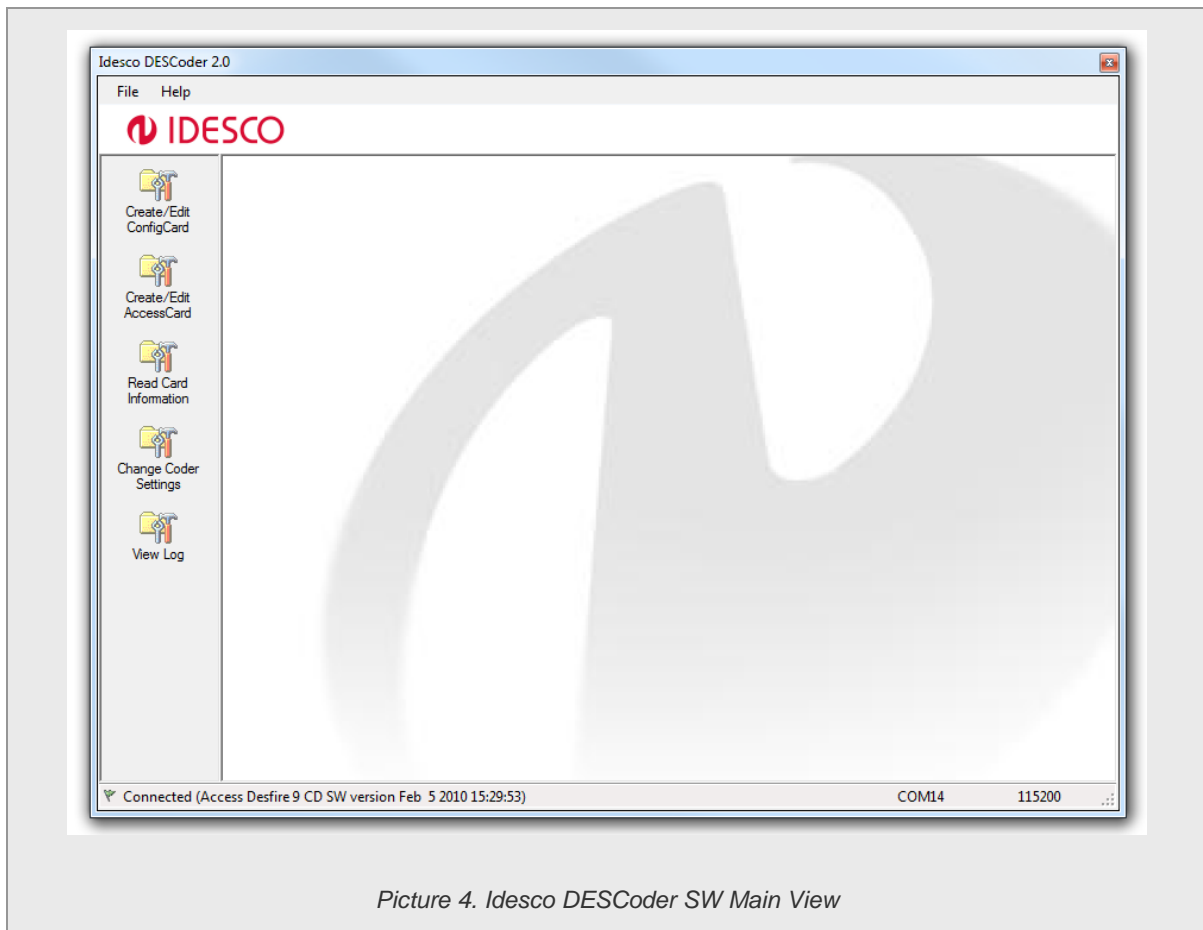
Status of the connection is shown at the bottom of the Idesco DESCoder main - window.



Try different serial port or baud rate if the connection was not established successfully.

3.3. Main Program view

Program main window appears when connection to the reader is established. User can choose 'Create/Edit ConfigCard', 'Create/Edit AccessCard', 'Read Card Information', 'Change Coder settings' and 'View Log' options from the main view.



3.4. Create / Edit ConfigCard

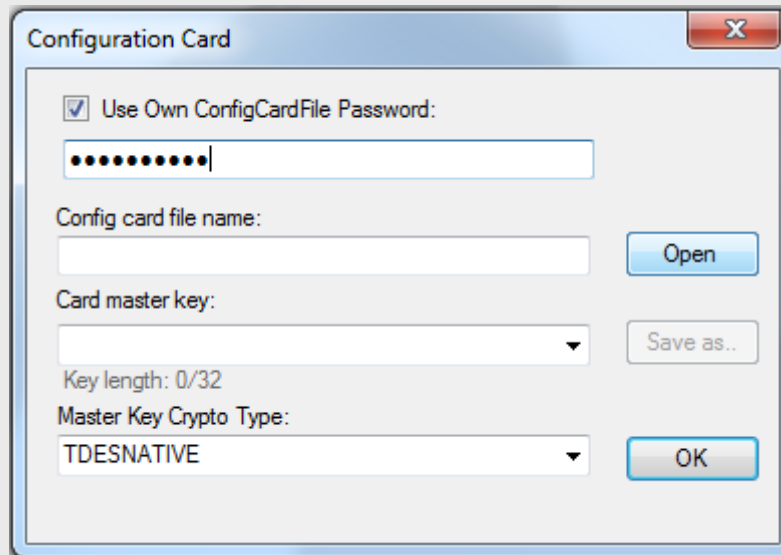
Press Create / Edit ConfigCard to start programming configuration card. In case you have existing configuration card file, open it by clicking 'open'- button and if it is protected using own password so that password must type before opening.

If configuration file does not exist, enter new file name. In this case DO NOT check/enable 'User Own ConfigCardFile Password' option.

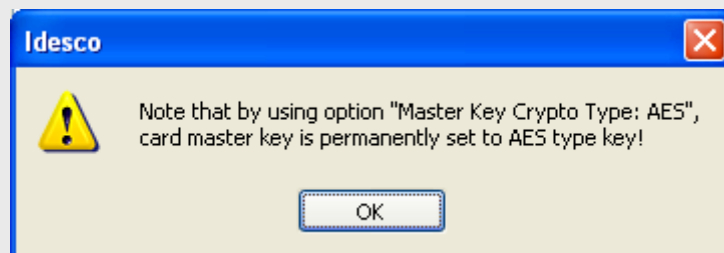
Next enter card master key and master key crypto type. Card master key has all the read and write rights to inside the configuration card. Use card default keys (as a default keys are 0000...0000) only when making possible test configurations! When creating configuration card for real applications DO NOT use default key as card master key.

Finally choose master key crypto type from pull down menu and save the file by pressing the save as button. After saving the file choose OK to start creating the configuration cards. Configuration cards are constructed from three configuration files which are described in the next chapter.

Note that when master key is defined as AES key, key type can not be changed back to TDES after writing the configuration card key. See pictures 5 and 6



Picture 5. Configuration Card Start View



Picture 6. AES Master Key

3.4.1. General configuration card structure

Configuration card consists of four DESfire files defined below. Note, that configuration cards can only be coded to DESfire EV1 cards.

Interface settings file: File defines what interface settings and parameters are defined to 8 CD readers.

Command file: File defines what kind of DESfire application and file structure is searched from DESfire access cards by Access 8 CD readers.

DESFire Keyfile: File includes information about the keys what will be stored to the 8 CD reader. Please note that access card read keys can not be entered in this window. Access card read keys must be entered when creating the command files. Desfire KeyFile only summarize the access card read keys that will be used when authentication to chosen application and to chosen file is done.

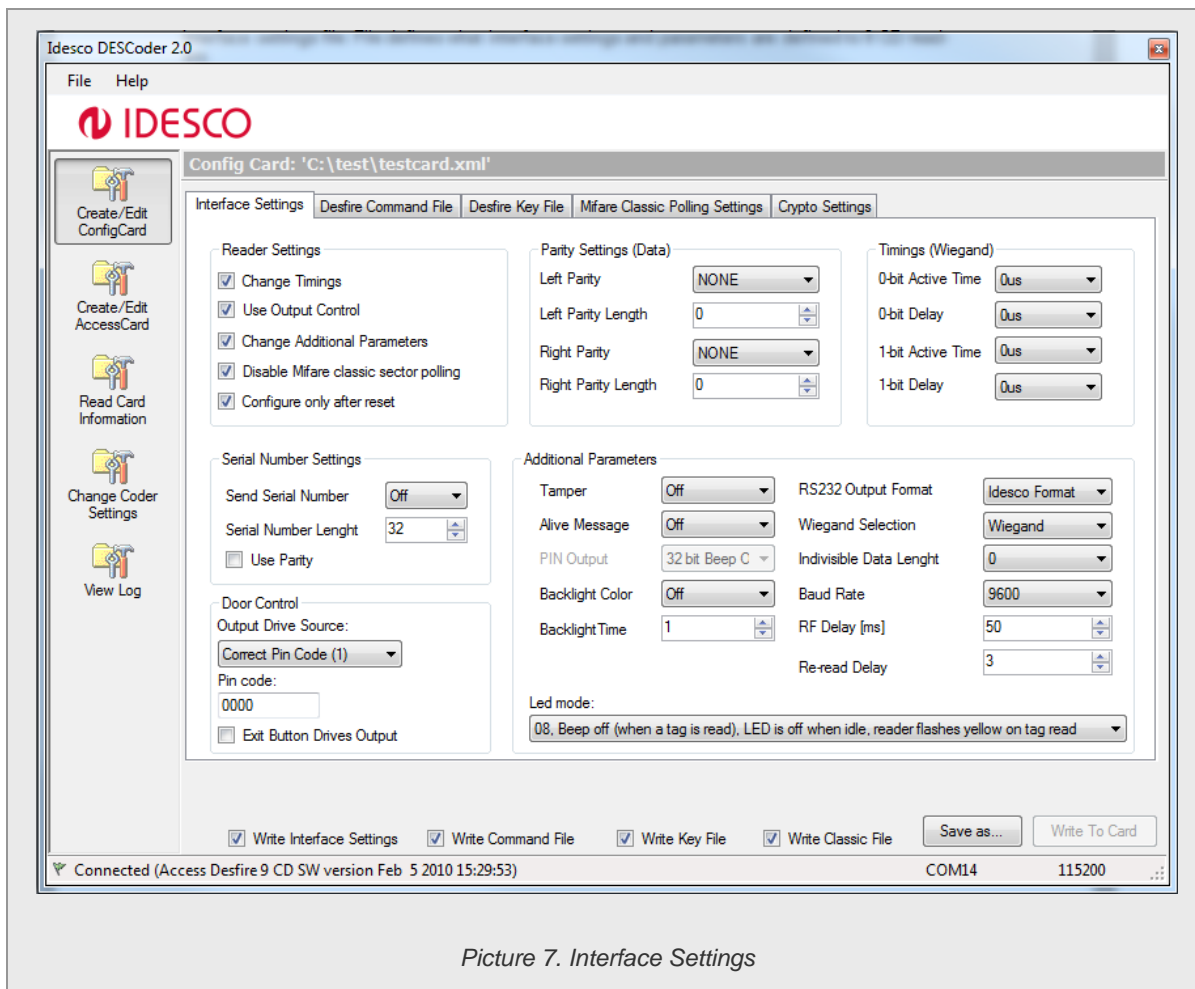
Mifare Classic File: File include information about Mifare Classic sector polling key, polling key type (key A / key B), default polling sector and data location inside the sector.

Reader configuration card read key (in DESoder SW "Conf Card Key") is defined and can be changed in the DESFire key file. Configuration card read key stored in the reader memory must match with current conf card read key defined here in KeyFile

Configuration card write key has write access to configuration card application.

3.4.2. Interface settings

In the Interface Settings Tab user can define the 8 CD reader interface and other settings for reader behavior.



Picture 7. Interface Settings

3.4.2.1. Reader settings group box

Choose 'Change Timings' if reader Wiegand/Clock and Data timings needs to be changed

Choose 'Use Output Control' if output control needs to be used

Choose 'Change Additional Parameters' if other parameters needs to be changed

Choose 'Disable Mifare Classic sector polling' if Mifare Classic sector reading needs to be disabled.

Note! Mifare Classic UID can still be read out if "Send Serial Number" is set ON

Choose 'Configure only after reset' if it is required that reader configuration card reading is only accepted after reader HW reset.

Note! Disabling Mifare Classic sector polling improves the security of the system and is highly recommended if it is not necessary to read Mifare Classic cards as well.

3.4.2.2. Timings group box

Set the Wiegand/Clock and Data timings according the system requirements

3.4.2.3. Parity Settings group box

Set the parity bit settings according the system requirements

3.4.2.4. Additional Parameters group box

Tamper

- Choose tamper on / off
- When enabled, Tamper alarm message will be sent to both Wiegand and RS232 lines in every 7 seconds, whenever tamper switch is launched. Note that tamper can also be used with output control. See separate chapter for output / door control options
- Tamper output is defined in 8 CD 2.0 output format description.

Alive Message

- Choose Alive message on / off
- Alive message will be sent only to Wiegand line, not to RS232. When set ON, the alive message will be sent first time 30 seconds after reset and then once in a minute.
- Alive message structures (4- options) are defined in 8 CD 2.0 output format descriptions.

Pin Output (for pin readers)

- Choose pin data length
- Pin outputs are defined in 8 CDpin output format descriptions.

Backlight Colour (for pin readers)

- Choose backlight colour option
- Note! If reader is equipped with one colour LED's, only options red and yellow can be used.

Backlight Time (for pin readers)

- Choose how long time backlight LED's are on after pin is pressed or after card has been shown.
- Time is entered in seconds. Please note that value 63 will set backlights continuously on.
- Note that backlight time can also be used with output control. See separate chapter for output / door control options

RS232 Output Format

- Choose Idesco format or HEX RS232 format
- In Idesco format coded data is sent out as ASCII characters
- In Hex bytes coded data is sent out in hex as it is written to card

Mifare Classic Output Format

- Choose Wiegand or Clock and Data Output option
- Note that timing parameters are also changed according to the selected Output

Indivisible Data Length

- Choose how many bits are left out from the beginning of the data string
- This option can be used for creation of indivisible data lengths (for example 35- bits)
- Example:
 - Access card has 40- bit data coded
 - Choose indivisible data length parameter as 5 bits
 - With this configuration parameter, reader will skip the first 5 bits coded to card memory and sends out 35 bit data in Wiegand format

Baud Rate

- Choose RS232 baudrate

RF Delay

- RF delay time defines how often cards are polled in air interface (i.e polling frequency). As a default this value is set 50 ms. Normally there is no need to change this value. If this parameter is changed to higher value also card reading time will be longer.

Re- read Delay

- Defines the re- read time when same card (same card UID) can be read again. Note that 8 CD readers work so that card does not need to be removed from reading field to read the same UID again.

Led Mode

- Choose LED / Buzzer mode

3.4.2.5. Serial Number Settings group box

Send Serial Number (Card UID)

- Choose serial number on / off
- When serial number is set on reader will send out card UID if application or sector search criteria do not match
- Note. It is highly recommended to set this setting OFF if the application data is used. This is because on fringe area of the reading field the reader can't always find the application data properly but it still can find the UID and sends that out to the system if this setting is ON. This may cause problems, since the system can receive wrong data (UID instead of application data).

Serial Number length

- Define what is the data length for UID

Use Parity

- Define whether parity bits are added to UID or not.

3.4.2.6. Door control group box

8 CD 2.0 readers have two FET outputs what can be used for example for ooutput control. Output changes its state when output is controlled. User can choose five different options for door control trigger. User can also define whether reader input is used to trigger the output.

Choose the needed output trigger from the 'Output Drive Source' pull down menu.

Correct pin code

- Choose Correct Pin Code from 'Output Drive Source' pull down menu
- Enter the pin code to the 'Pin code' text box. NOTE that pin code format is always 32- bits when pin code is used with output control.
- Define output control time from the 'BacklightTime' pull down menu. Note, that BacklightTime also defines the time when pinpad buffer is cleared.
- Function: Output is controlled when the pin code is entered correctly. Output is controlled as long as it is defined in the backlight time menu. Note that max time for the FET output control is 10 seconds (settings between 10 and 62 seconds). Maximum value of backlight time setting (63 seconds) sets the keypad light continuously on but time to wait next keypad press only to 10 seconds and FET control to 3 seconds.
- Example: Backlight time set to 5 seconds and pin code defined as 1234 hex. FET is controlled for 5 seconds when "1234" has been pressed. Reader waits max 5 seconds between pin pressings before buffer is cleared.

Successful Card Read

- Choose Successful CardRead from 'Output Drive Source' pull down menu
- Define polling structure from the command file tab (see also chapter 3.3.3)
- Define output control time from the 'BacklightTime' pull down menu
- Function: Output is controlled when card with correct application structure is shown to the reader. Output is controlled as long as it is defined in the backlight time menu. Note that max time for the FET output control is 10 seconds (settings between 10 and 62 seconds). Maxi-

Maximum value of backlight time setting (63 seconds) sets the keypad light continuously on but time to wait next keypad press only to 10 seconds and FET control to 3 seconds.

Card + pin code

- Choose Card + Pin Code from 'Output Drive Source' pull down menu
- Card + pin mode is combination from Correct Pin Code and Successful Card Read options. Enter pin code and define the card polling structure as defined in the Correct pin code and Successful Card Read chapters.
- Function: Output is controlled when card with correct application structure is shown the reader and when four pin codes have been entered correctly. Output is controlled as long as it is defined in the backlight time menu. Note that max time for the FET output control is 10 seconds (settings between 10 and 62 seconds). Maximum value of backlight time setting (63 seconds) sets the keypad light continuously on but time to wait next keypad press only to 10 seconds and FET control to 3 seconds.

Tamper alarm

- Choose Tamper Alarm from 'Output Drive Source' pull down menu
- Choose pin code length from 'Pin Output' pull down menu. Tamper alarm always sends out letter "C" hex to Wiegand and RS232 lines when alarm is set. When using Wiegand interface data can be sent out in 4-, 6- and 8-bit formats.
- Function: Output is controlled when tamper alarm is launched. Output is controlled as long as it is defined in the backlight time menu. Note that max time for the FET output control is 10 seconds (settings between 10 and 62 seconds). Maximum value of backlight time setting (63 seconds) sets the keypad light continuously on but time to wait next keypad press only to 10 seconds and FET control to 3 seconds.

Correct PIN Code (2)

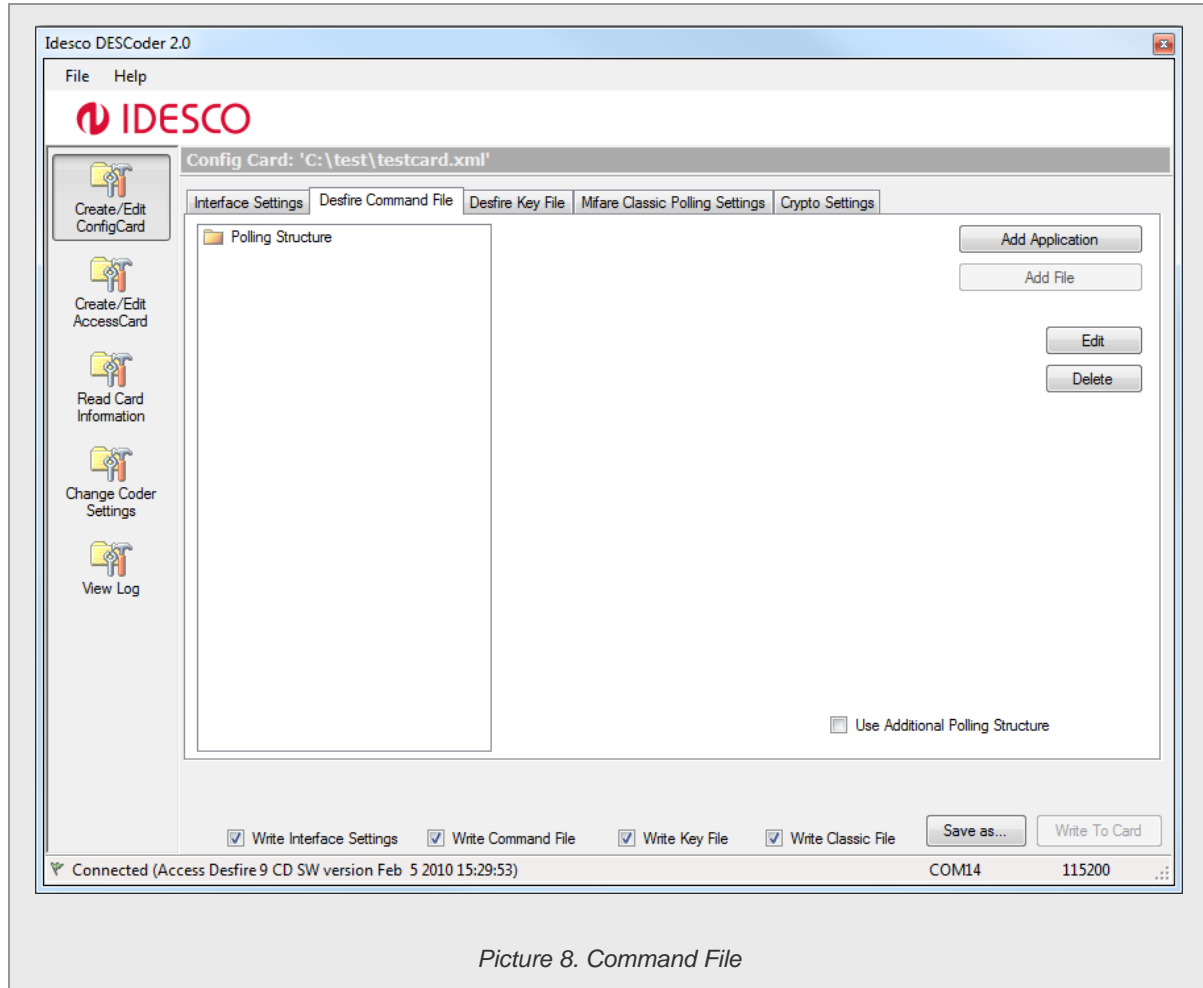
- Choose Correct Pin Code (2) from 'Output Drive Source' pull down menu
- Enter the pin codes to the 'Pin code' and 'pin code (2)' text boxes. NOTE that pin code format is always 32-bits when pin code is used with output control.
- Define output control time from the 'BacklightTime' pull down menu. Note, that BacklightTime also defines the time when pinpad buffer is cleared.
- Function: Output is controlled when the pin code 1 or pin code 2 is entered correctly. Output is controlled as long as it is defined in the backlight time menu. Note that max time for the FET output control is 10 seconds (settings between 10 and 62 seconds). Maximum value of backlight time setting (63 seconds) sets the keypad light continuously on but time to wait next keypad press only to 10 seconds and FET control to 3 seconds.
- Example: Backlight time set to 5 seconds and pin code defined as 1234 and 5678 hex. FET is controlled for 5 seconds when "1234" or "5678" has been pressed. Reader waits max 5 seconds between pin pressings before buffer is cleared.

Exit button Drives Output

- If this option is used output is controlled when input wire is grounded.

3.4.3. Command Files

In the Command File Tab user can define from which applications and files data is collected. User can define the command strings how the data is searched from access cards.



3.4.3.1. Creating Polling Structure with one file

This chapter defines polling structure for reading the data from one application and from one file.

Example:

Data in 0048B3 application and in file 01 is AES protected.

Read key value is 11111111111111112222222222222222

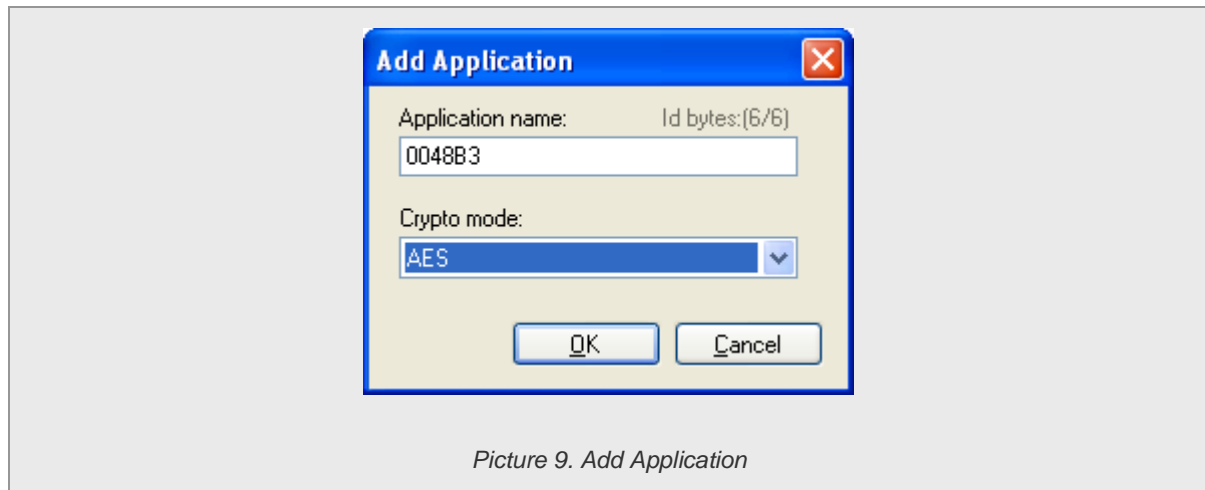
Data is stored to first four bytes in the file 01.

See pictures 6 and 7 for creating the application and file.

3.4.3.2. Add Application

Choose "Add Application" to define application what 8 CD reader should read from the access cards.

Define application name (hex numbers) and choose Crypto mode



3.4.3.3. Add File

Choose created application and choose "Add File".

Define file number to be read (decimal number)

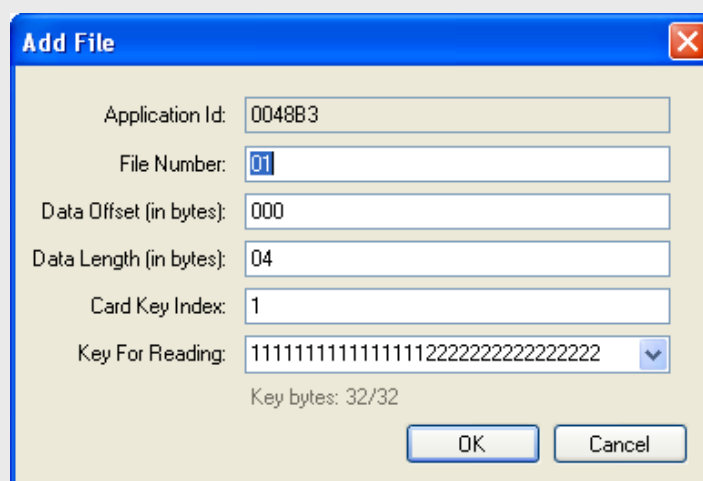
Define Data Offset: Define what byte inside the file is the first byte to be read out

Data Length: Define how many bytes are read out

Card Key Index: Define what the key index inside the application is.

Key for Reading: Define what is the key used for reading the file

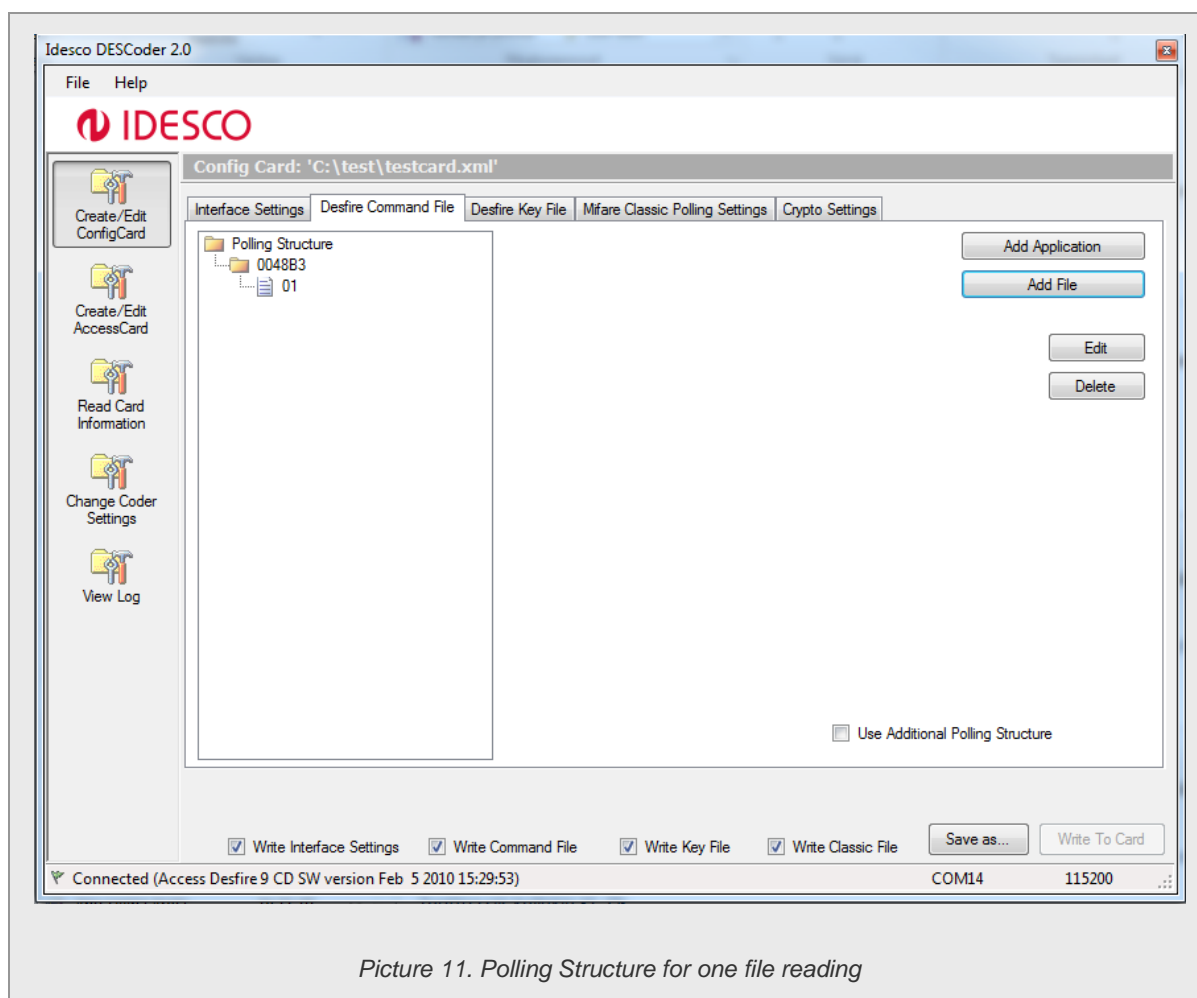
Choose OK and polling structure is shown in the SW menu.



The 'Add File' dialog box contains the following fields and controls:

- Application Id: 0048B3
- File Number: 01
- Data Offset (in bytes): 000
- Data Length (in bytes): 04
- Card Key Index: 1
- Key For Reading: 11111111111111111222222222222222 (dropdown menu)
- Key bytes: 32/32
- OK button
- Cancel button

Picture 10. Add File



Picture 11. Polling Structure for one file reading

3.4.3.4. Function with 8 CD reader:

When 8 CD reader is configured with above example command file structure reader function is following:

Search application 0048B3 from access card

If application is found try to authenticate with AES key 1111.....2222 to file 1 in the application 0048B3

If authentication is successful reader sends out 4 bytes from access card file 1 starting from byte 0.

3.4.4. Creating Polling Structure with several files

This chapter defines polling structure for reading the data from two applications and from two files.

Example:

Data in 0048B3 application and in file 01 is AES protected.

Read key value is 11111111111111112222222222222222

Data is stored to first four bytes in the file 01.

Data in application 112233 is TDES protected.

Read key value is 22222222222222223333333333333333

Data is stored to first four bytes in the file 01.

3.4.4.1. Add applications

Define application names (hex numbers) and choose Crypto modes.

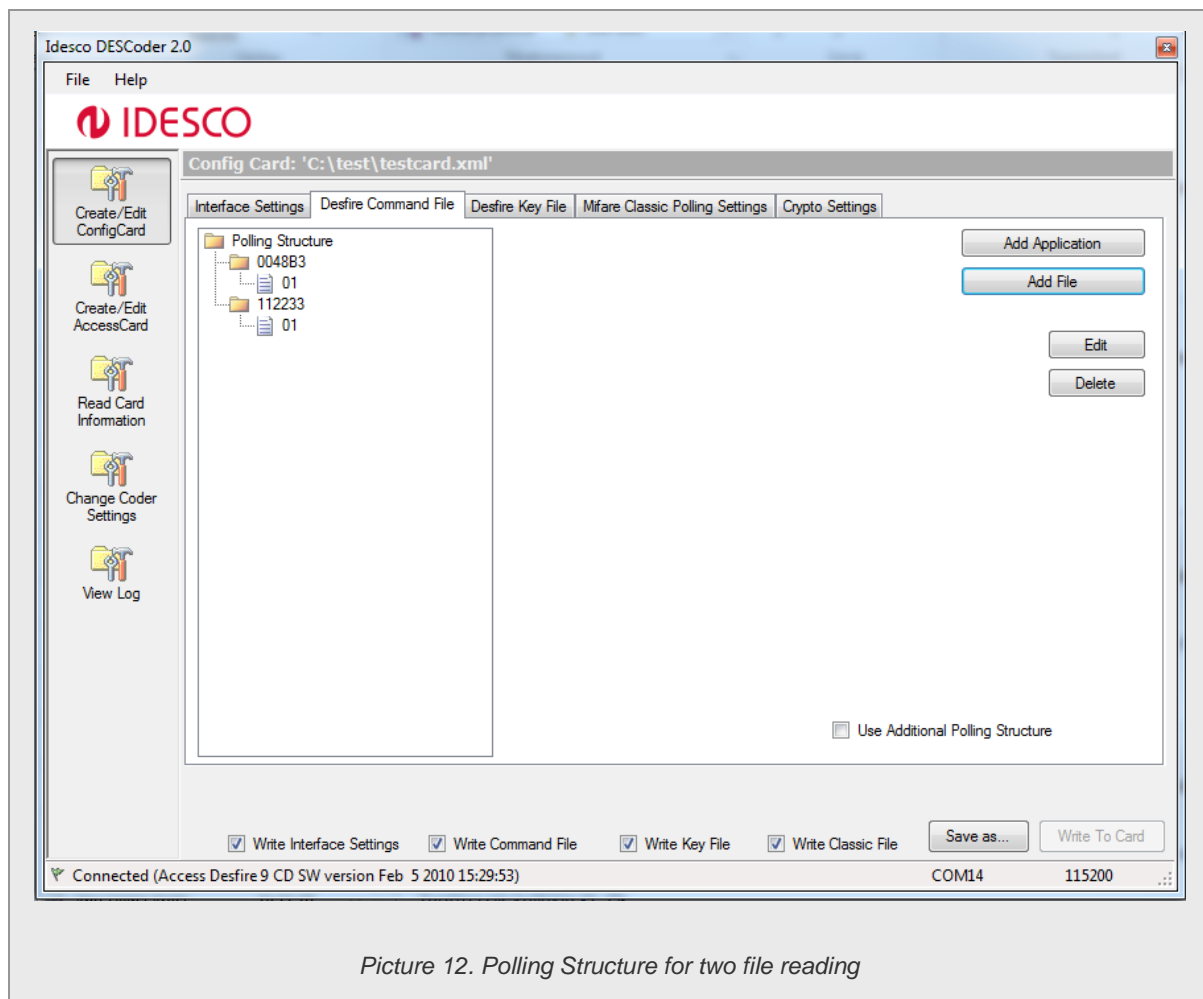
See example picture 7 for application creation from chapter 3.3.3.2.

3.4.4.2. Add files

Define application file numbers (decimal numbers)

See example picture 8 for creating the files from the chapter 3.3.3.3

See picture 10 for polling structure for two file reading.



Picture 12. Polling Structure for two file reading

3.4.4.3. Function with 8 CD reader:

When 8 CD reader is configured with above example command file structure reader function is following:

Try to search application 0048B3 and file 1 from access card. If first application and file is found try to search application 112233 and file 1 from the same card. If also second application and second file is found try to authenticate with required crypto mode and keys.

If authentication is successful send out the data from both applications as it is defined to add file search criteria

NOTE! In the example data is read out first from the file 1 in the application 0048B3 and then from the file 1 in the application 11223. Data from both files are combined before sending the data out.

3.4.5. Create two polling structures

This chapter defines polling structures for reading the data from two applications and from two files and from two different card populations

Example:

Card population 1

Data in 0048B3 application and in file 01 is AES protected.

Read key value is 11111111111111112222222222222222

Data is stored to first four bytes in the file 01.

Data in application 112233 is TDES protected.

Read key value is 22222222222222223333333333333333

Data is stored to first four bytes in the file 01.

Card population 2

Data in 123456 application and in file 01 is AES protected.

Read key value is 11111111111111112222222222222222

Data is stored to first four bytes in the file 01.

Data in application 334455 is TDES protected.

Read key value is 22222222222222223333333333333333

Data is stored to first four bytes in the file 01.

3.4.5.1. Add applications

Define application names (hex numbers) and choose Crypto modes.

See example picture 7 for application creation from chapter 3.3.3.2.

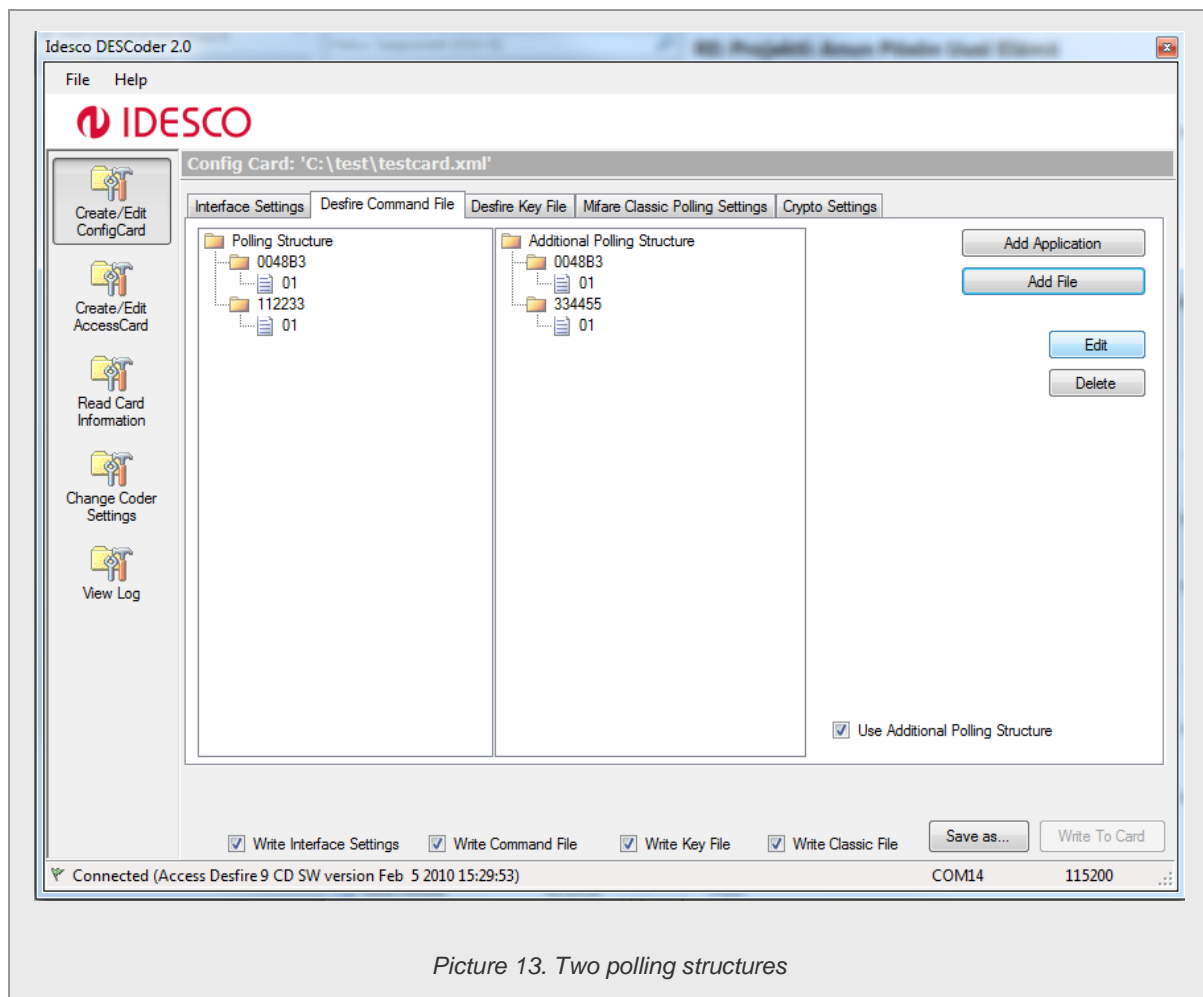
Choose “use additional polling structure” from the command file tab. User can now create second optional polling structures i.e. user can define two card populations what reader can search.

3.4.5.2. Add files

Define application file numbers (decimal numbers)

See example picture 8 for creating the files from the chapter 3.3.3.3

See picture 11 for two polling structures



3.4.5.3. Function with 8 CD reader:

When 8 CD reader is configured with above example command file structure reader function is following:

Reader checks if the first command string rules match. If the first command string rules match reader sends out the card data to the system and does not check the second command string rules.

If the first command string rules do not match, reader check whether second command string rules match.

If the second command string rules match reader sends out the card data to the system
Note that also two polling structures can consist of several applications and files.

3.4.6. DESfire Key File

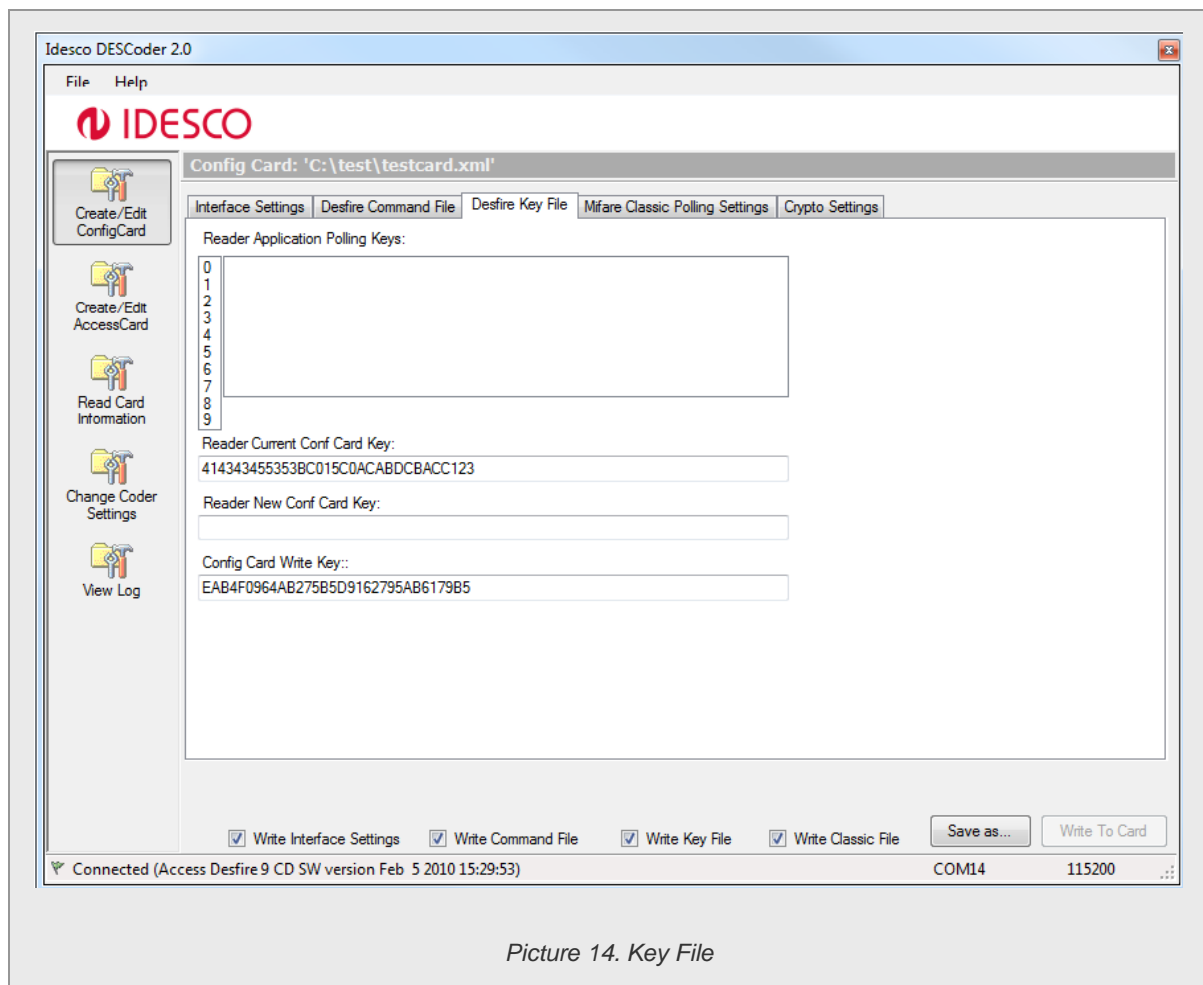
Key file includes all the keys what are written to the 8 CD reader memory when reader is configured. Access card read keys are entered when polling structure is created to command file. Access card read keys cannot be changed in key file tab.

Reader configuration card read key (in DESoder SW "Conf Card Key") and configuration card write key are changed in the key file tab. To achieve maximum security these keys should be changed when readers are configured.

Reader configuration card read key: This key is used to read the configuration cards by reader. Default configuration card read key stored in the reader memory is 414343455353BC015C0ACABDCBACC123.

Write new configuration card read key to the "Reader New Conf Card Key" text box. NOTE: When configuration card read key is changed this new key must be used as "current conf card key" next time in order to get the 8 CD reader reconfigured!

Configuration card write key: Enter new configuration card write key to "Config Card Write Key" text box. This is a random key value which is changed every time new configuration is created. Configuration card write key is only used for protecting the configuration card files, so normally this key do not need to be used. This key is only protecting the application files for unintentional writing.



3.4.7. Mifare Classic polling settings File

In the Mifare Classic polling setting Tab user can define from what sector data is collected. User can define the polling key, key type, default sector and data settings from this menu.

3.4.7.1. Change polling key

Define the polling key for the sector data. Default key in the 8 CD- reader for sector data reading is 414343455353. User can enter required key value or use random number button to create new key for sector data reading.

3.4.7.2. Reader key type

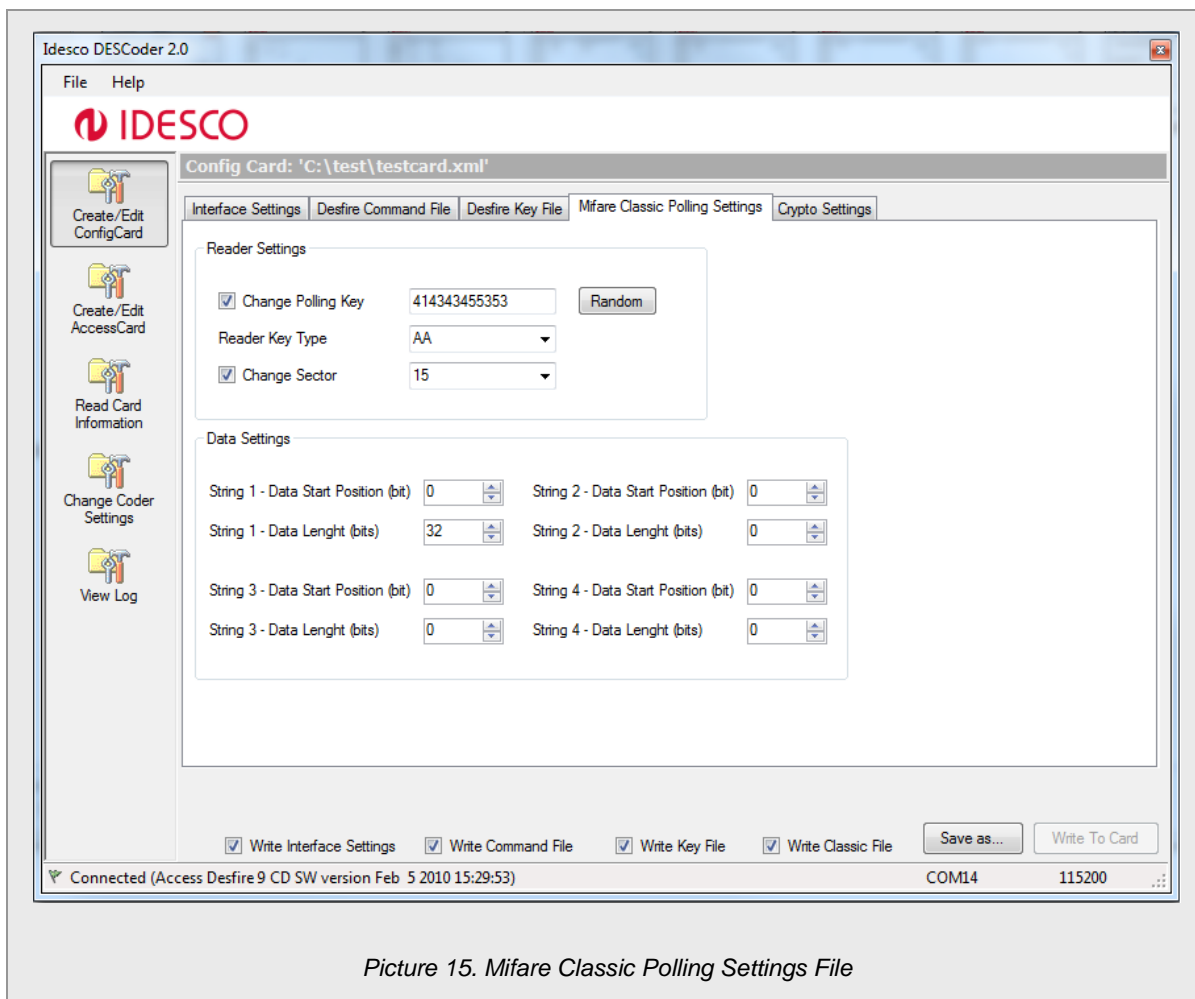
Define key A or Key B for sector data reading

3.4.7.3. Change sector

Define the default sector where data is read. Note that default sector value only define the sector number where key match is checked first. If default sector key value does not match reader is also checking the other sectors for key match (up to sector 15).

3.4.7.4. Data settings

Define where data located inside the sector. User can define four “blocks” (strings 1-4) from which the data is constructed. Data Start Position (bit) defines from which bit data collection is started and Data Length (bits) defines the data length for each string separately.

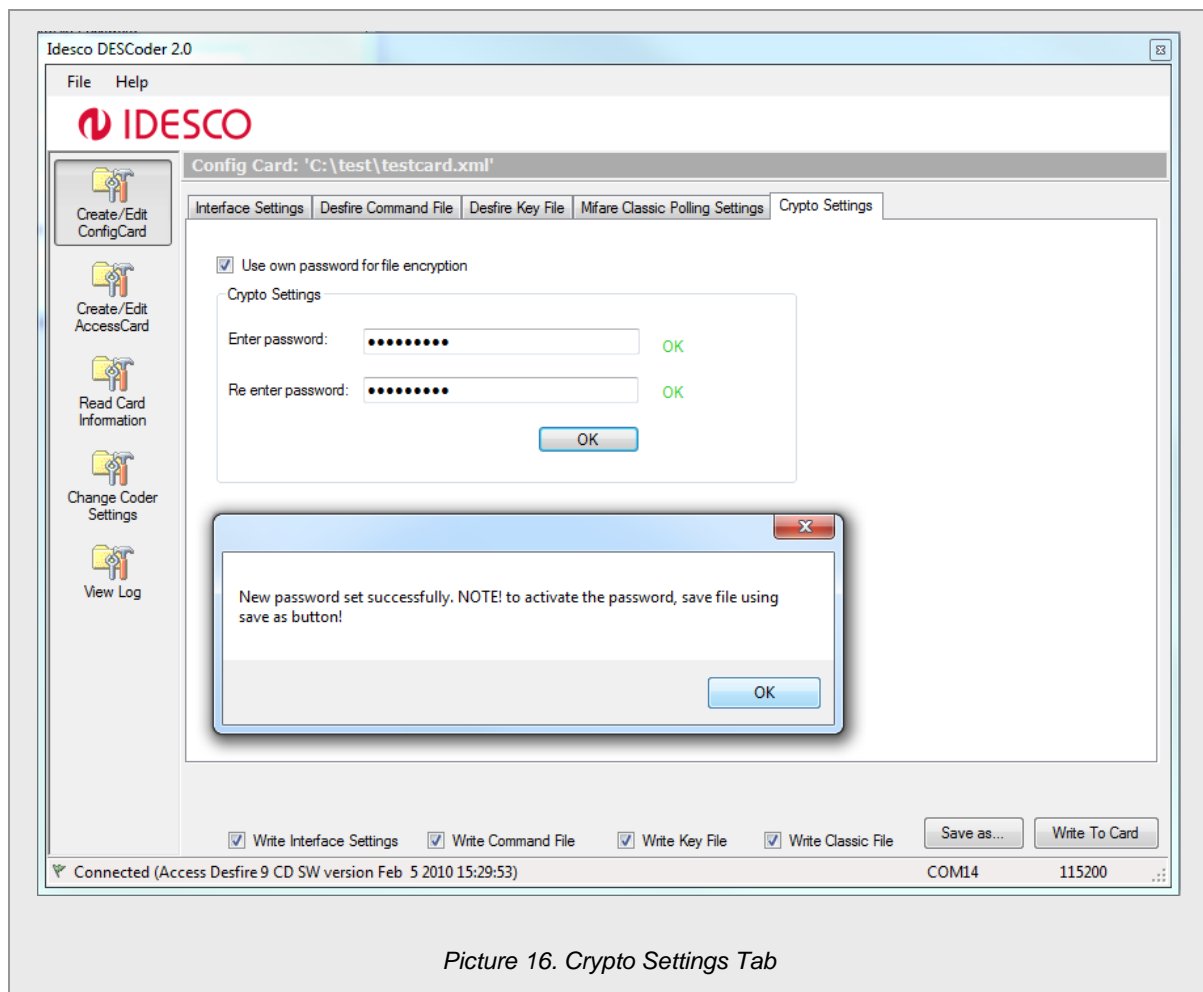


3.4.8. Crypto Settings Tab

Crypto settings is used for encryption of XML- format file using own password. When using this option, the password have to be typed before is possible to open XML- format file. See chapter 3.4.

Password have to be 8-12 characters length.

Changes are taken into use when saving the file.



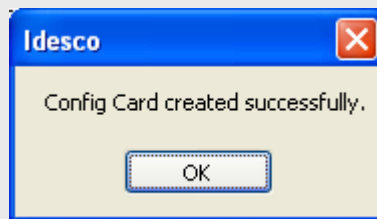
Picture 16. Crypto Settings Tab

3.4.9. Write configuration card

When all four configuration card files has been defined press 'Save as' - button to save the defined parameters to the Configuration card file.

After file is saved configuration card can be programmed by pressing 'write to card' - button.

Software will inform when configuration card has been written successfully.



Picture 17. Configuration card created

3.5. Create / Edit Access card

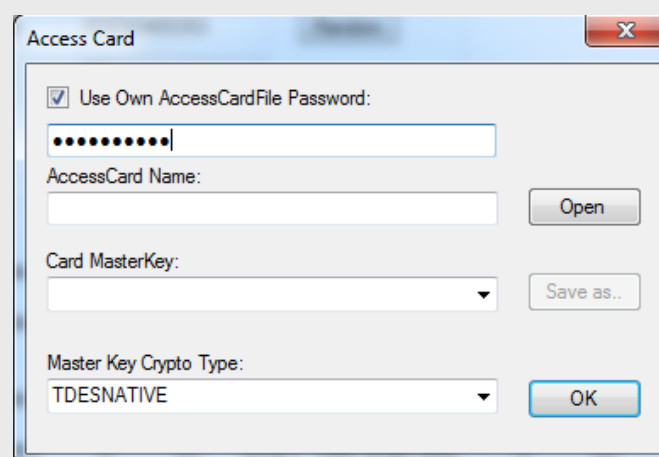
Press Create / Edit AccessCard to start programming access cards.

Choose existing access card file by clicking 'open'- button. If file is protected using own password that password must type before opening. If access card file does not exist enter new file name. In this case DO NOT check/enable 'User Own AccessCardFile Password' option.

Card master key: Enter Card Master Key. It is important to change Card Master Key since this key can be used to delete applications from created access cards! Default key (0000....0000) can be used to create test cards, but do not use default keys in real access cards! Using default key in the real access cards creates potential security risk!

Finally choose master key crypto type from pull down menu and choose Save as to save the access card file. After saving the file choose OK.

After this user can start to create / edit the access cards.



Picture 18. Access card start view

3.5.1. Add application

Choose “Add application” in the create access card main view.

Define application name (3 hex bytes).

Choose crypto type (AES, TDES Native). Note that crypto mode is defined when application is created! All keys inside the application are treated as AES keys if the chose crypto more was chosen to AES.

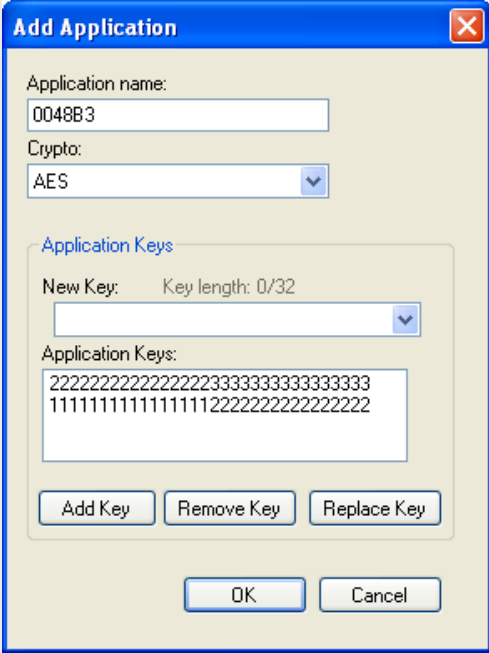
Add keys:

Enter new key to “new key” text box. When key is entered choose “Add Key” and key is moved to application keys.

Keys can be removed by choosing the key and pressing “Remove Key” button.

Keys can be replaced by entering the new key, then choosing the key to be replaced from application keys and pressing “Replace Key” button.

Choose OK when all the application parameters have been entered.



Picture 19. Add Access Card Application

3.5.2. Add file

Choose "Add file" in the create access card main view.

Define File ID: Max file ID with DESfire EV1 cards is 31

Define access file size in bytes. Note that different DESfire cards have different size memories. Check the card type for maximum file size before creating the access cards.

Choose security level: Plain or Crypted

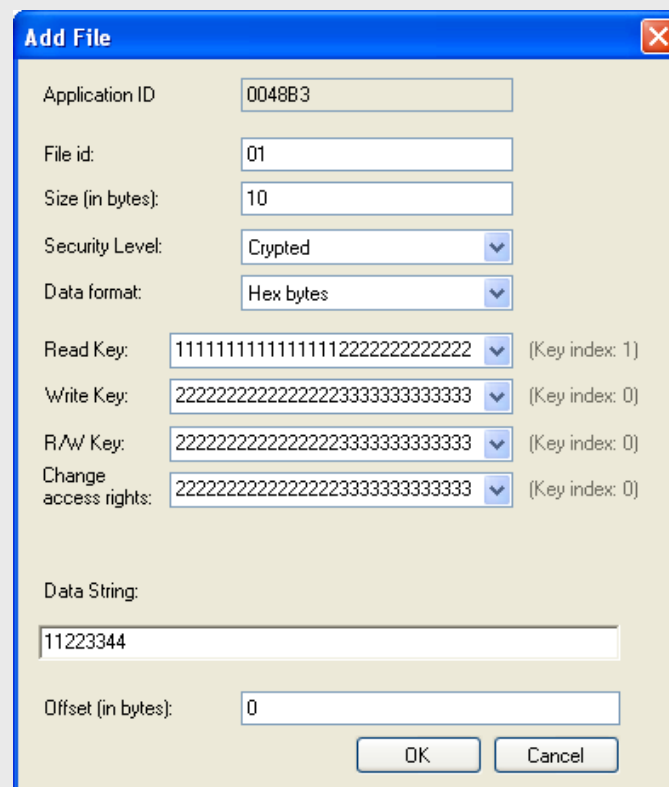
Choose data format: defines the format how the data is written to the file

Choose keys: pull down menu shows the keys what can be used. Keys has been defined when creating the application defined in the chapter 3.4.1

Data string: Enter the data to be coded to the card

Enter the data offset: what is the first byte inside the file where the data is coded.

Choose OK when all the file parameters have been entered.



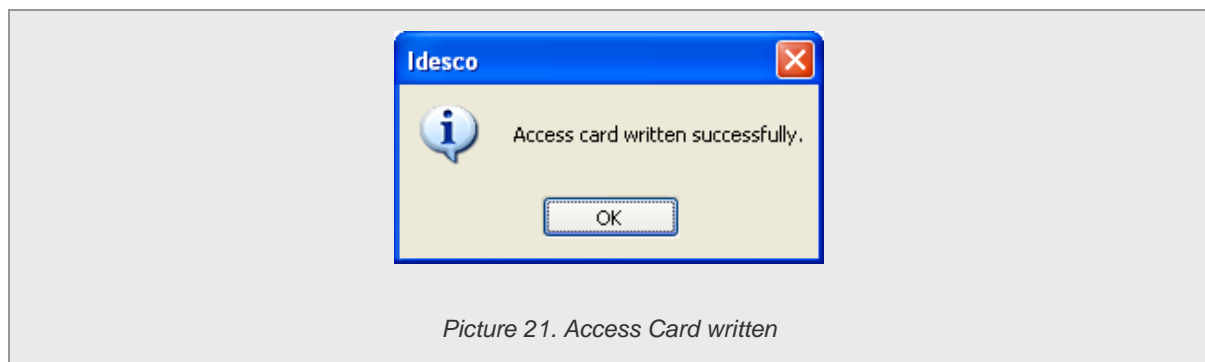
Picture 20. Add Access Card File

3.5.3. Write access cards

When access card file has been defined press 'Save as' - button to save the defined parameters to the access card file.

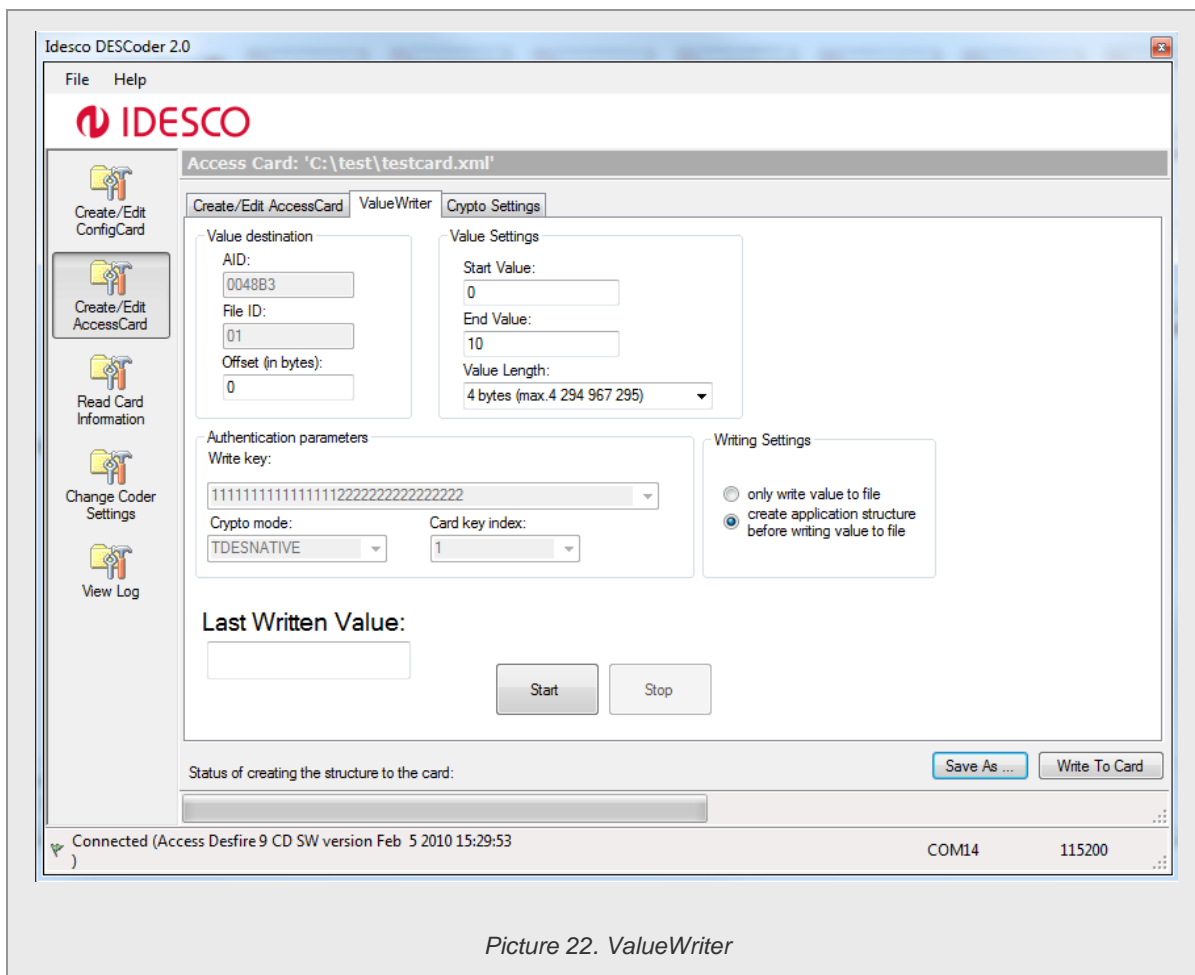
After file is saved access card can be programmed by pressing 'write to card' - button.

Software will inform when configuration card has been written successfully.



3.5.4. Value Writer

Descoder can be used to program access cards in series by using special value writer. User can select one application and one file where data will be written. File to be written must be selected first from Create/ Edit access card tab. After selecting the file choose ValueWriter tab (see picture 18).



3.5.4.1. Value Destination group box

AID

- Shows the ID number of application what includes the file where data will be written.

File ID

- File number where data will be written

Offset

- Offset value for the first byte inside the file where data will be written. If value is for example 0000 data will be written starting from byte 00.

3.5.4.2. Value Settings group box

Start value

- First number to be written to the file

End value

- Last number to be written to the file

Value Length

- Defines the value field length. Parameter defines how many bytes are reserved for value storage.

3.5.4.3. Authentication parameters group box

Authentication parameters group box shows the crypto mode and write key what is used to write the data to the file.

3.5.4.4. Writing settings group box

Writing settings define if the data is written to the existing file or if the application and file structure is programmed during card coding.

3.5.4.5. Writing data with value writer (example)

Required steps are defined below.

1. Choose file to be written from Create/ Edit access card tab
2. Choose the ValueWriter
3. Check that correct file and application are shown in 'value destination'.
4. Check that write key, crypto mode and card key index are correct
5. Enter the offset value. Note, that if it is necessary to use some fixed value (facility code etc) offset value must be defined so that fixed value is not overwritten. Fixed value can be entered from Create/ Edit access card tab, Add File (Edit File). Enter the possible fixed value to Data String field.
6. Enter the Start value
7. Enter the End value
8. Enter the value length. This option defines how many bytes are reserved for the data field.
9. Select writing settings
10. Save the file from 'Save As' button
11. Press Start button to start creating the access cards
12. When card is written successfully ValueWriter will give information about the successful write operation

3.5.5. Example for usage of created Configuration card and Access card files

The function of the reader configured with example Configuration card created in chapter 3.3.3.3:

- Reader is configured to read application 0048B3
- Crypto mode is AES
- Key with card key index 1 is used for reading the data (see configuration card example in picture 7)
- Key value for reading is 11111111111111112222222222222222.
- Data length to be sent out from the reader is 4 bytes.

The properties of the example Access card created in the chapter 3.4.2:

- The file size of access card is defined to be 10 bytes
- Security level is crypted

- Hex bytes coded to the Access card are 11223344.

See example access card structure from pictures 15 and 16.

Function of Access 8 CD reader with example configuration and with example access card structure:

When is detecting and authenticating with the access card, reader will send out data 11223344 hex to the host system.

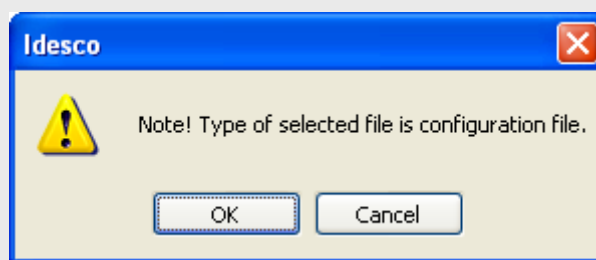
3.5.6. Create Access cards from configuration card file

DESCoder SW has a possibility to create access cards by using created configuration card polling structure. With this option created configuration card file can be used to create similar access card structure configuration card is defining

Required steps are defined below

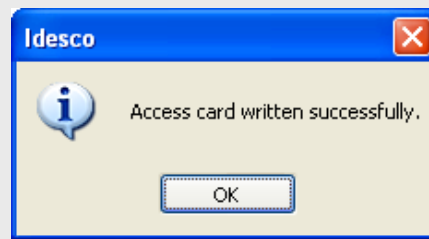
1. Choose Create/Edit Access card
2. Open created configuration card file.

SW will open the information window as described in the picture 19.



Picture 23. Opening the configuration file for access card creation

3. Choose OK.
4. Enter new name for access card file and save the file from by pressing 'save as' button. After saving the file choose OK.
5. Choose file and Edit to check structure is defined correctly. Check the key values and indexes and enter the data to be written to the file. Note that after using Edit function file must be saved again.
6. Choose Save As (if Edit function was used) to save the access card file.
7. Choose Write To Card. After successful writing event, the pop up window "Access card written successfully" will appear. See picture 20.



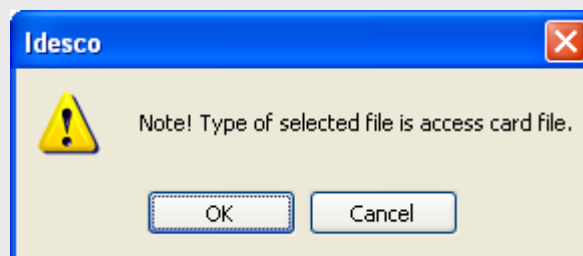
Picture 24. Access card written

3.5.7. Create Configuration card from access card file

DESCoder SW has a possibility to create configuration card by using created access card application structure. With this option access card application structure pre- defined to command file tab in the Create/Edit ConfigCard option. Note that reader settings must be defined separately.

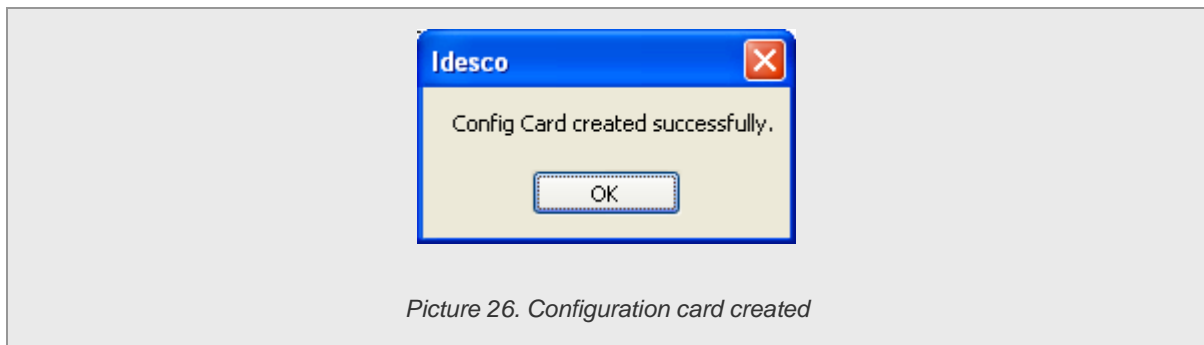
1. Choose Create/Edit ConfigCard.
2. Open Access card file.

SW will open the information window as described in the picture 21.



Picture 25. Opening the access file for configuration card creation

3. Choose OK.
4. Enter new name for configuration card file and save the file from by pressing 'save as' button. After saving the file choose OK.
5. Choose 'command file' and check that application and file structure is correct.
6. Choose Save As (if Edit function was used) to save the access card file.
7. Define other reader parameters and save the file by pressing the 'Save as' button.
8. Choose Write To Card. After successful writing event, the pop up window "Conf card created successfully" will appear. See picture 22.



3.6. Read card information

Select "Read Card information" to read the DESfire card data contents.

Read card: Press Read Card. Program will show the card structure, applications and files

Read file: Choose the file to be read, read key and crypto mode and press Read File. Program will show the data written in the file. See example from picture 23.

File settings: Choose the file to be read and press File Settings. See example from picture 24.

Definition for file keys: 1000 in the example, see picture 24.

First key: read key

Second key: write key

Third key: Read / write key

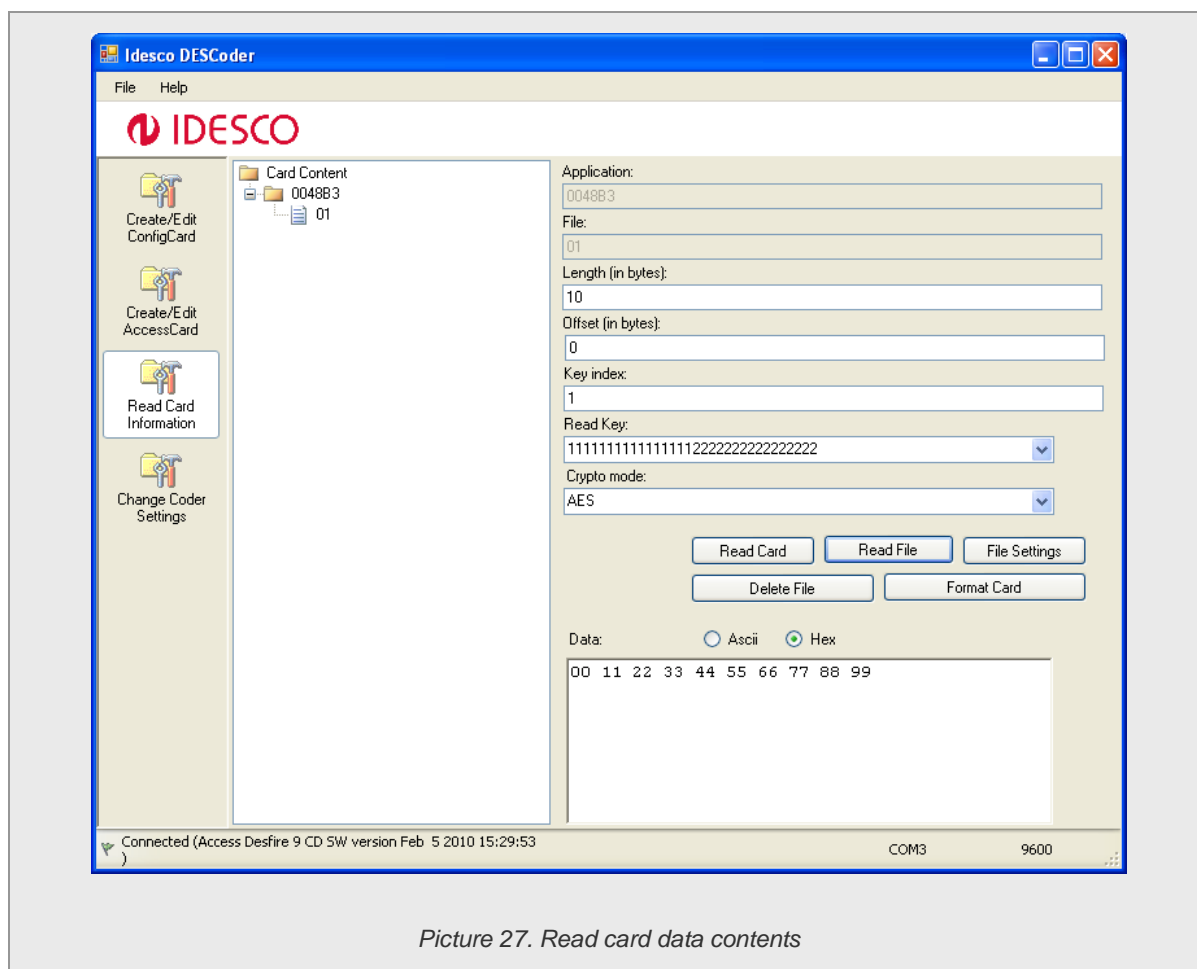
Fourth key: Change access right key

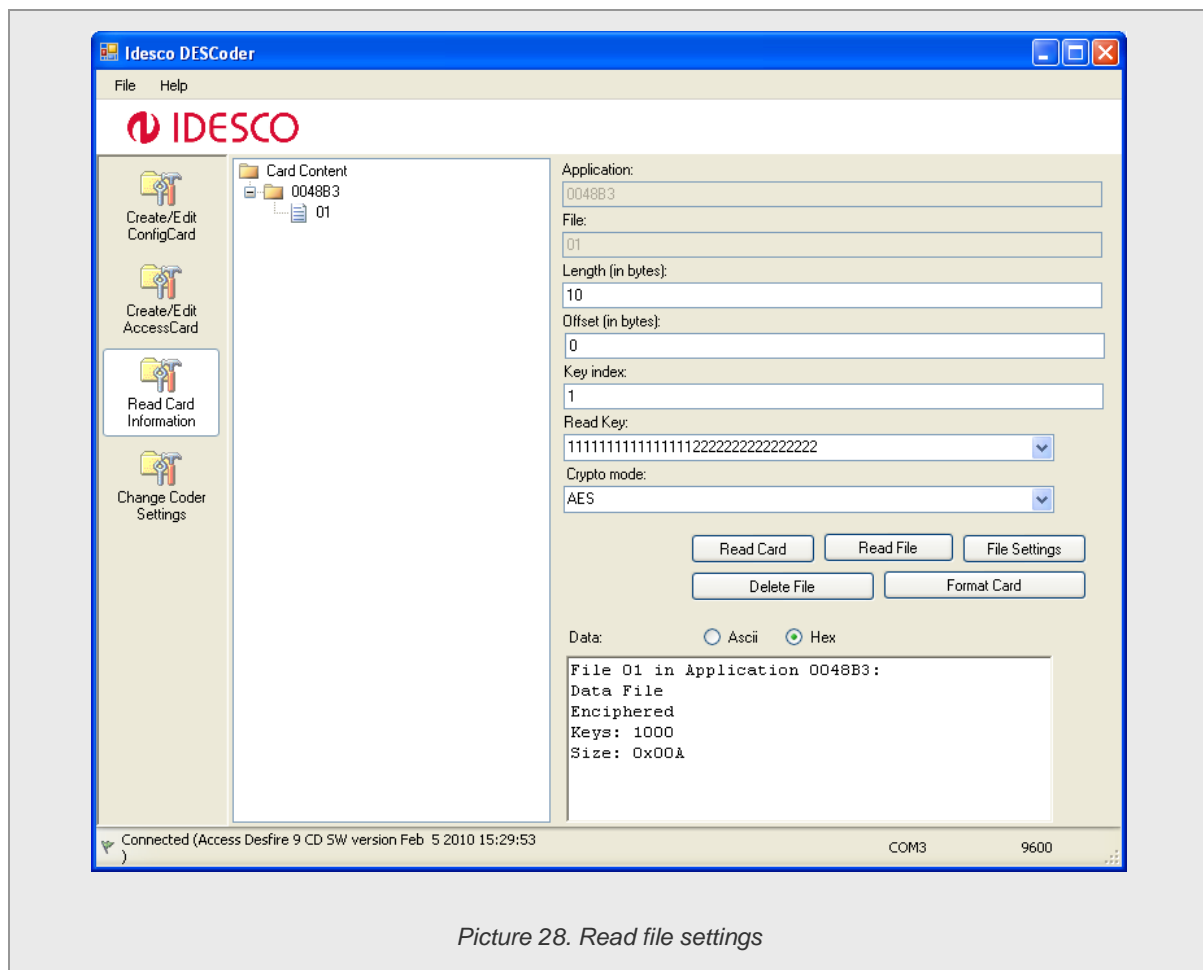
In the example, value 1000 for file keys means that the key with index 1 is used for reading the file and key with index 0 can be used as write key, read/write key and change access right key.

Definition for file size: defined in hex byte -> 00A hex is a file with 10 bytes

Delete file: Choose the file to be deleted. Choose / enter the correct write key (Key with Index 0 in this example) and crypto mode. Press delete file and file will be deleted.

Format card: Choose the card contents. Choose / enter the correct Card master key and crypto mode. Press format card and card will be formatted.

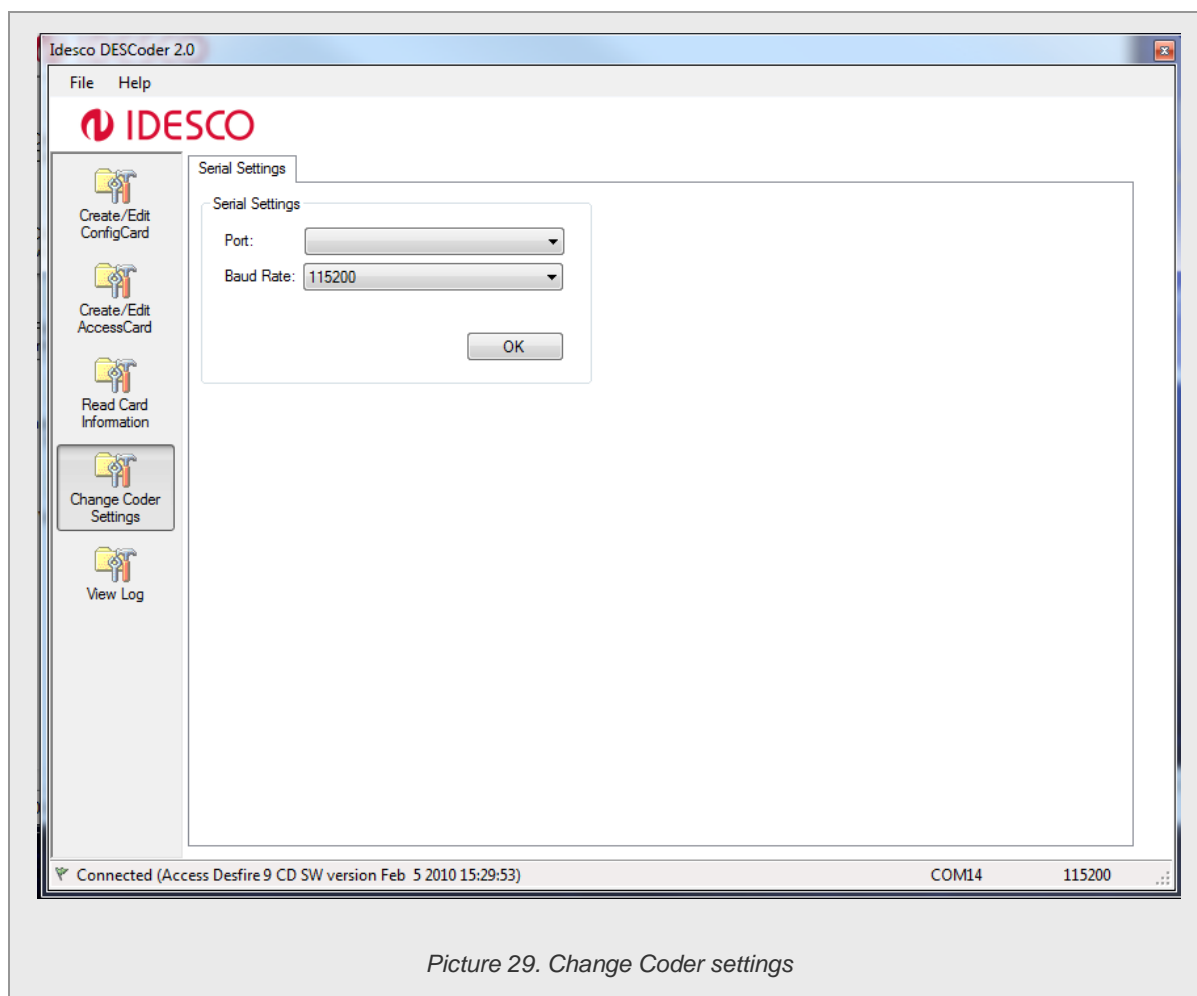




3.7. Change Coder settings

Press “Change Coder settings” to change the DESCoder baud rate and used COM port. After changing the settings, choose OK. System serial port settings changes can effect DESCoder COM-port connection and it is recommended restart computer after system COM-port changes (control panel) before launchin DESCoder.

If the reader was found DEScoder shows information “Connected” and shows connected reader SW version at the bottom of the settings window. See picture 21. DEScoder SW shows information “Disconnected” if reader was not found.



3.8. View Log

Press 'View Log' to see all write events done by DESCoder. Only user with Administrator-rights can enter into Log page.

